

THE IMPACT OF REGULATIONS ON ELECTRICITY SECTOR - SECURITY, RELIABILITY, EFFICIENCY

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I. INTRODUCTION

Undeniable that sub-legislative acts elaborated by the National Energy Regulatory Agency (NERA) in accordance with the Regulation [1] promote the concepts of these laws to a large extent determining the economic development of the country, the safe operation of the National Power System, supply reliability and other issues related to the effectiveness of the electricity “*production – consumption*” couple. With the liberalization of the electricity market an important role is on account of electricity networks that have a multiple technical and commercial role:

- it is the physical environment of electricity transmission in the geographical area;
- provides access to the network and the market;
- provides electricity at the security and quality standards required by both the user - the client, and the system operation.

Starting point: An investor has obtained land to start a business related to production. To organize production it is necessary to have a building or group of buildings. To put it into operation, the object has to be connected to the network of the distribution operator. Depending on the distance to the operator’s network, connection can be achieved only by **connecting**, or, in the case of long distances, by **extending** the operator’s network with subsequent **connection** to it.

Let us see what are the provisions of the national legislation to achieve these important investment components?

According to [2]:

1. **Electricity distribution network expansion** - increasing the capacity of existing electricity distribution network or construction of new electricity networks or portions of electricity distribution networks, actions performed by the distribution network operator to meet electricity demand of individuals and legal entities that require connection to the network;

2. **Connection** - performing a permanent electrical connection between the usage facility and the electricity network by the distribution network operator;

3. **Article 40** [1]. Distribution network operators perform network expansion in relation to increasing electricity demand, so as reliability and continuity of electricity supply to consumers to be ensured, according to a regulation developed and approved by the Agency.

4. In [1] provisions on procedures for accomplishing the connection to the electricity network are missing.

2. ELECTRICITY DISTRIBUTION NETWORK EXPANSION

Let us analyze the mechanism and steps for undertaking the process of electricity network expansion regulated by [3]:

1. The local public authority is responsible for the design of the new electricity distribution network - p.12 [3];

2. The local public authority or investor shall submit the operator an application for the expansion project inclusion in the work plan of the operator. Within 15 days of receipt of the application, the operator is obliged to inform the local public authority or investor about project acceptance for review – p. 13;

3. If the application for inclusion of the expansion project is submitted until September 30 this year, the operator shall examine the application and, where applicable, includes the projects in the work plan for the coming year – p. 14;

4. If the public authority or investor requests the extension of the new network within more limited time than the one established in the investment plan, the operator is entitled to refuse the request or to propose the applicant to fund the new network expansion. To this end the local authority or the investor will conclude a contract with the operator where the allocated amount, terms and reimbursement conditions will be stipulated – p. 21.

Comments:

1. Provision 12 [3] is contrary to the provisions of Art. 40. (1). [2] by which “*Distribution network operators perform network expansion ...*”, the design being part of the expansion process;

2. Provision 14 [3] is bureaucratic and discriminatory (acceptance / rejection, up to September 30) and can cause corruption;

3. According to provision 21 [3], network expansion will be made by crediting the operator by applicants: the applicant obtains a loan from the commercial bank in the amount of 2-3 million lei (one kilometer connection to a substation of 250 kVA in the conditions of the Republic of Moldova costs about 1.5 million lei). In principle, this is a provision which is contrary to financial and banking legislation. The reimbursement of the "loan" by the operator may take more time than stipulated in the contract which will cause significant additional costs to the applicant. It can cause corruption.

4. From the investment point of view no investor will accept the "speeding" of the expansion through the proposed mechanism. However, the credit line being open, he cannot wait a year or more for network expansion, the connection to which will last 3-4 months.

Conclusion:

Most likely the investor will abandon the investment. The economy will lose jobs, investment image will diminish and electricity consumption will not increase.

Romanian Law [4] does not use the term "expansion". According to Article 45 (1) [4], the "distribution operator has the following main tasks:

c) carries out development works of electricity distribution networks through **programs** and their optimal **development plans** based on prospective studies, in consultation, where appropriate, with the transmission and system operator ...".

Article 3 [4]: "**Development plan** – long term planning document of the investment needs in distribution capacities in order to cover the electricity demand of the system and to ensure delivery to customers".

3. CONNECTION TO THE ELECTRICITY NETWORKS

Connection to the electricity networks is a very important procedure, regardless of user nature - residential or industrial. The importance of this procedure is also confirmed by art. 3.3 of the Directive 2009/72/ EC [5] "... Member states shall impose on distribution companies an obligation to connect customers to their network under some established conditions and tariffs, in accordance with the procedure stipulated in Article 37.6 ...".

The provisions of Article 37.6 share responsibilities: "*The regulators are responsible for fixing or approving, sufficiently in advance of their entry into force, at least the methodologies used to calculate or establish the terms and conditions for:*

a) connection and access tariffs to national networks, including transport and distribution tariffs".

The complexity of the procedure for connection to electricity networks is determined by the diversity of possible situations, which is confirmed by the legislative and regulatory acts package of **Romania:**

1. Law on electricity and natural gas;
2. Regulation on the connection of users to public electricity networks, approved by the Government Decision;
3. Documents approved by the National Energy Regulatory Authority:
 - Technical Code of Electricity Distribution Networks;
 - Regulation on the establishment of solutions for the connection of users to public electricity networks;
 - Methodology for setting tariffs for the connection of users to the electricity distribution networks of medium and low voltage;
 - The procedure of solving the disagreements on connection of users to public electricity networks and issuing location permits;
 - The procedure on the connection of users to the electricity networks in the vicinity of the boundary of the activity area of distribution operators.

According to Article 25 (1) [4] (RO), "*The licensee and the client have regulated access to public networks. Access to public networks is a mandatory service, under regulated conditions, which the transportation operation and distribution operator have to meet*".

In case of connection to the electricity network Article 26 [4] provides the conclusion by the applicant of the connection contract with the distribution operator. The connection procedure is determined by [4] and is carried out by performing the following steps:

1. **Applying for connection.** The connection solution is determined by the network operator through the solution sheet or solution study, as appropriate. The costs related to drafting of the solution sheet are included in the tariff for issuing the connection technical approval.
2. **Issuing the connection technical approval;**
3. **Conclusion of the connection contract.** After the conclusion of the connection contract, the

network operator provides: **design, construction and commissioning of the connection plant;**

4. Powering the plants.

The work cost is paid by the applicant in several stages on the extent of work performance.

The Regulation [6] contains a very important provision for both the distribution operator and the consumer: Article 40 (2) “*These plants shall remain in the property of the network operator and can be used for connecting other users ...*”

In the case of the **Republic of Moldova** the basic legislative act [2] does not contain conceptual provisions, which would determine the procedure for connecting to the electricity network.

The mechanism of connecting to the operator’s network is determined by 23 provisions (three pages) of **Section 6** [7]

„**Connection of the applicant’s installation to the electricity network**” and involves the following steps:

1. **p. 55.** “*The network operator is obliged to provide the applicant no later than 15 calendar days the connection approval*”.

Comment: Typically, the procedure can last 2-3 months due to the lack of capacity of the distribution operator in the area or the refuse of the network owner, which the operator appealed to. For these reasons the length of the connection network can reach 0.7 to 1.5 km.

2. **p. 61.** “*At the request of the applicant, the network operator performs the design and mounting of the connection installation. Connection work is carried out after concluding the contract on the mounting of the connection installation and after paying these costs by the applicant*”.

Comment: “... the network operator performs the design and mounting of the connection installation” which means that there appears an intermediary, because the operator (in the case of Moldova) has no design office and capabilities that would undertake the design and mounting of the connection installation.

3. **p. 67.** “*Once the conditions included in the connection approval are met, the applicant addresses to the network operator for drawing up and signing of the demarcation act*”.

Comments: According to **p. 76 and 77** [7], “*The property demarcation point is set to a physical element For industrial consumers, the demarcation point is determined based on the agreement between the industrial consumer and operator ...* “. This is a camouflaged provision, but due to the presence of the word “*property*” the connection point is also the demarcation point. Once becoming the owner of the connection

installation, the user will incur additional costs because it will be obliged:

- to conclude a contract on the maintenance of the connection installation with an authorized company or the distribution operator;

- under provision 114 [7], “*In case the measuring equipment of the industrial consumer is not installed at the demarcation point, the loss of active and reactive power in the network elements comprised between the two points is added to the amount of energy registered by the measuring device, calculated in accordance with the Instruction on the calculation of active and reactive power losses in the network elements which are at consumer’s account ...* “. This is a provision used by the operator to obtain additional income as calculation methods are complicated for users. Frequently, cases are detected when power losses, without transformation stage, reached 25 - 50% and even 100% (Annex 1, Fig. 1). In these calculations, the reactive power costs as if it is active;

- the distribution operator connects other users to the connection installation without informing the owner of the network;

- it is not clear how the electricity market will be liberalized under these situations.

4. **p. 72.** “*The network operator may refuse argued the issuance of the connection approval to the applicant, potential final consumer, if facing a lack of capacity, including on the grounds that there*

ANNEX 1

Articolul de calcul Служба расчета	Consumat kWh, kvach Расход	Tariful lei/kWh (kvach) Тариф	Cost TVA % % НДС	TVA pt art. lei/kWh (kvach) НДС ст-м	Suma fara TV lei Сумма без НДС
09 Pierderi de en. act. in transf.	0	1.100	20.00	0.220	0.0
09 Pierderi de en. activa in linii	10239	1.100	20.00	0.220	11262.9
09 Consum Tehnologic (ind.)	0.0	1.100	20.00	0.022	0.0
09 Consum Tehnologic (cap.)	0.0	1.100	20.00	0.022	0.0
09 Consumul energiei active	4239	1.100	20.00	0.220	4662.9

Calculare totale Окончательный расчет	
a fără TVA:	15925.80
a TVA: Factura fiscală, seria și nr. RH1886872	3185.16

Figure 1.

is no electricity network or that the existing electricity network is not able to meet the electricity requirements of the applicant”.

Comment: This is a discriminatory provision which contravenes the concept promoted by art. 3.3. [5] even if in the law preamble there is the phrase “*this law sets the framework necessary for the application of the Directive 2003/54/EC ...*”.

According to Article 25.(2) [4], “**The access to the network can be restricted only if the connection affects the safety of the Electric Power National System...**”.

4. CONCLUSIONS

1. In reality, under the connection pretext, the extension (development) of electricity distribution networks occurs. At the same time, a considerable technically and economically unjustified financial flow is directed to the operator;

2. Network development, having a character of solving concrete situations (isolated fragments), caused by private interests, for the moment, affects the geometry of distribution networks, and is of chaotic nature. As a result, protection systems are getting complicated, especially future network monitoring and equipment with SCADA elements, reduces efficiency, service level and service quality;

3. If the current conception of the connection procedure continues, the share of private/personalized electricity networks will increase, which will lead to the complication of relationships on the electricity market;

4. The very important and difficult procedure (which is actually confirmed through the acts package of Romania) - connection to the electricity network, in Moldova it is regulated only by 20 provisions of the act, which is intended only for the supply procedure. Obviously, it is an imperfect mechanism that causes proactive treatments and irregular “*supplier-consumer*” relations, which disadvantages domestic and foreign investors;

5. **In both the current Law on electricity and in the proposed amendments, there are not included the provisions of preamble 45, Art. 3 (3) and 37 (6) of [5]: “There should be taken actions to ensure transparent and non-discriminatory tariffs for the access to the network. These tariffs should be applicable to all system users on a non-discriminatory base”.**

“The main obstacles to reach an internal market, fully functional and competitive, relate, inter alia, to issues of access to the network ...” [5].

Through concrete examples, it was demonstrated that the analyzed documents contain deviations from European standards, do not stimulate and do not require operators to upgrade the components of the power system, to ensure efficient operation and to increase *safety, reliability and quality*.

Bibliography

1. Regulation on the organization and functioning of the National Energy Regulatory Agency Nr. 238 of 26.10.2012
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3. Regulation on the expansion of electricity distribution networks Nr. 439 of 23.11. 2011.
4. Law on electricity and natural gas Nr. 477 of 09.07.2012, RO.
5. Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity.
6. Regulation on the connection of users to public electricity networks, approved by the Government Decision Nr. 90, 2008, RO.
7. Regulation on the supply and use of electricity Nr. 393 of 15.12.2010.